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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,025	07/18/2003	Shoji Suzuki	004085.P032	4457

7590

07/20/2005

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EXAMINER

HABERMEHL, JAMES LEE

ART UNIT PAPER NUMBER

2651

DATE MAILED: 07/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/623,025	Applicant(s) SUZUKI, SHOJI	
	Examiner James L. Habermehl	Art Unit 2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-24, 26-30 and 32-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-24 and 32-39 is/are allowed.
- 6) ☒ Claim(s) 26-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. This Office action is in response to amendment filed 16 March 2005, which papers have been placed of record in the file.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 26 and 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Tani et al.

Regarding claim 26, Tani et al. Figure 5 meets all the limitations of the claims, including flying a slider body (1) with a positive pitch angle (θ_{p1} and 170) over the data zone of the disk (5), and maintaining the positive pitch angle of the slider body during contact between the slider and disk wherein the pitch angle is in a range of 20 to 50 μ rad (para 0018-0019, 0023, 0066, 0070).

Regarding claim 28, the positive pitch angle is maintained using at least one protrusion (16) disposed forward of a pivot point of the head (22).

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Regarding claims 29-30, a friction force must necessarily be generated during contact between the slider and the disk, and the at least one protrusion (16) has a contoured leading edge step (difference-in-stage) which generates some amount of counter force against a contact force (para 0019, 0024, and 0070).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tani et al. Tani et al. meets all the limitations of the claim, including flying a slider body (1) with a positive pitch angle (θ_{p1} and 170) over the data zone of the disk (5), and maintaining the positive pitch angle of the slider body during contact between the slider and disk (para 0018-0019, 0023, 0066, 0070), except it does not explicitly specify a pitch angle range of 50 to 200 μ rad, during operation. It does specify a positive pitch angle of 20 to 150 μ rad, and discloses test data for slider performance at angles up to several hundred μ rad. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pitch angle of 50 to 200 μ rad instead of the disclosed 20 to 150 μ rad, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Claims 2-24 and 32-39 are allowed over the prior art of record. The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a load/unload disk drive comprising a securing mechanism configured to receive the suspension arm to load and unload the slider body, and a disk wherein the protrusion maintains the slider body with a positive pitch attitude during contact between the slider body and the data zone of the disk surface, as presented in the environment of claim 2. It is noted that the closest prior art, Kasamatsu et al., shows a positive pitch attitude maintaining protrusion similar to the claimed invention. However, Kasamatsu et al. fails to disclose a securing mechanism configured to receive the suspension arm to load and unload the slider body, and a disk wherein the protrusion maintains the slider body with a positive pitch attitude during contact between the slider body and the disk surface as claimed.

Claim 20 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a slider comprising a leading edge step having a non-sloping surface and a protrusion disposed on the leading edge step that extends beyond the air bearing surface and has a contoured leading edge, as presented in the environment of claim 2. It is noted that the closest prior art, Kasamatsu et al., shows a slider with a protrusion having a contoured leading edge similar to the claimed invention. However, Kasamatsu et al. fails to disclose a slider comprising a leading edge step having a non-sloping surface and a protrusion disposed on the leading edge step that extends beyond the air bearing surface and has a contoured leading edge as claimed.

Claim 32 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method comprising providing a slider with a first protrusion forward of the load pivot point, flying the slider in a load/unload disk drive, and maintaining a positive pitch angle of the slider during contacting the slider with the disk surface over a data zone, as presented in the environment of claim 32. It is noted that the closest prior art, Kasamatsu et al., shows a positive pitch attitude maintaining protrusion similar to the claimed invention. However, Kasamatsu et al. fails to disclose providing a slider with a first protrusion forward of the load pivot point, flying the slider in a load/unload disk drive, and maintaining a positive pitch angle of the slider during contacting the slider with the disk surface over a data zone as claimed.

Claim 36 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method comprising determining a minimum pitch angle of operation for a slider, and determining a protrusion height directly proportional to a distance of the read/write element from the protrusion and the minimum pitch angle of the slider, as presented in the environment of claim 36. It is noted that the closest prior art, Kasamatsu et al., shows a positive pitch attitude maintaining protrusion similar to the claimed invention. However, Kasamatsu et al. fails to disclose determining a minimum pitch angle of operation for a slider, and determining a protrusion height directly proportional to a distance of the read/write element from the protrusion and the minimum pitch angle of the slider as claimed.

Response to Arguments

7. Applicant's arguments with respect to claims 26-30 have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's argument concerning the obviousness of establishing the claimed positive pitch angle ranges of 50 to 200 μ rad and how the cited art was directed to a non-identical process and thus rendering reliance upon *In re Aller* inapposite (amendment pp. 14-15), the examiner notes that the new grounds of rejection cites new art that is considered to be an identical process in that it is aimed at reducing friction during a contact with the disk during operation as opposed to merely reducing stiction during start-up. Additionally, the examiner makes note that applicant's process in question is that which is claimed viewed in light of the specification, and not necessarily all that is disclosed within the specification.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Boutaghou et al. ('612) Figures 21-22 show protrusions with landing pads that are similar to applicant's invention, but are not considered to comprise a contoured leading edge.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after


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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James L Habermehl whose telephone number is (703)305-6975. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (703)308-4825. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Habermehl/jlh
13 Jul 05



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